


4.4 Statistical Bias
p.226- 235

A bias source can manipulate statistics to demonstrate any point

Sources of Bias
Each cartoon depicts a situation that could potentially provide inaccurate survey results. Describe each situation.



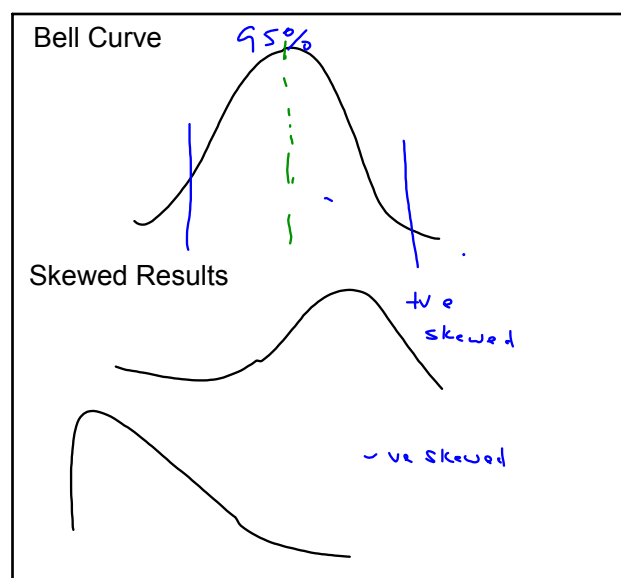
i) Sampling Bias

Examine Example 1 p. 237

Sampling Bias
Identify the **sampling bias** in each situation.

- To determine how people feel about a new product, 20 people were interviewed through a random selection of telephone numbers.
- A pollster in a shopping mall randomly selected people to interview as they walked by.

Mar 24-11:12 AM



Mar 23-9:42 AM

ii) Non- Response Bias

Example 2 p. 237

Non-Response Bias

A neighbourhood survey about children's playground equipment in a local park was sent to randomly selected households. Approximately 30% of the people responded and, in particular, people in condominiums tended not to respond. Explain how this situation represents **non-response bias** and suggest a way to correct it.

Voter Apathy

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iii) Measurement Bias

Example 3 p. 238

Measurement Bias

Provide an example of **measurement bias** that involves human error. Suggest how to improve the accuracy of the survey.

Solution

When recording the volume of solution after a chemical reaction, the lab assistant wrote some of the units using the abbreviated form "ML" instead of "mL." The abbreviation ML could be mistaken for megalitres. This error could be avoided by having all the people in the study use the same recording table, which has the correct units of measurement written in the column headings.

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iv) Response Bias

Example 4 p.238

Response Bias

Explain the possible **response bias** in each situation. Suggest how to eliminate the bias.

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4.4 Statistical Bias

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Key Concepts

- Statistical Bias** occurs when a systemic error leads to results for a sample being different than the population it represents
- Sampling Bias** occurs when the sample does not accurately reflect the general population. This could be because of the sampling method.
- Non-response bias** occurs when certain groups in the population are under-represented in the rate of response. I.e. rural concerns underrepresented in Greater Ottawa Region (New City of Ottawa)
- Measurement Bias** occurs when there are errors in the measurement technique. human error, improper calibration, reading and recording of data
- Response Bias** occurs when respondents give purposefully inaccurate responses survey i.e. avoid embarrassment, hidden agenda or leading questions

Mar 21-12:30 PM

Hmk. p. 239 -243
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Mar 8-7:37 AM